Opelousas Gas Plant

By Jackson Lee Nesbitt

The HUMBLE WAY

JANUARY-FEBRUARY, 1953

Safet
near

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Humble Sets A Safety Record

"SAFETY is not a thing of the past, nor a thing of the future, but a thing of today. Do today's job safely and be on the job tomorrow."

That was not the voice of management, nor a catchy exhortation from the safety handbook. It came from an employee in the field. And it concisely sums up a general employee attitude that underscores the need for constant day-to-day vigilance against accidents.

With that kind of safety-mindedness, Humble people set a new and brilliant record for safe working during 1952. In all that year, with 18,500 employees working nearly 37 million man-hours, not a single life was lost through accident or injury on the job!

That fact alone is cause enough for jubilation. But there is added lustre to Humble's 1952 safety record. During the year, the number of injuries causing temporary disability was reduced to 69—the lowest total in Humble history for a year's work. Compare that with 1504 such injuries for 1929 and you get a picture of the safety progress that has been made over the last quarter century.

Just how was this remarkable record set?

There is no mystery—no secret formula—to it. Steadily declining accidents through the years, culminating in the fine record for 1952, are a product not of one factor but of many. It is a record that pays its own tribute to the efforts of all people involved—to supervisors, to safety engineers, and perhaps most of all to employees who think and live safely on the job. As one Humble veteran of 30 years' service in the field put it "Safety is a 24-hour job."

LEADERS IN SAFETY
National Honors
(Awarded by National Safety Council)

Baytown Plants	First Place*
Refining Department	Award of Honor†
Production Operations	Award of Honor†
Gas Division	Award of Merit

*In national contest, Petroleum Section.
†National Safety Council's highest award.

State Honors
(Awarded by Texas Safety Association)

Gas Division	First Place
Exploration Department	First Place
Refining Department	First Place
Production Department	First Place

Safety Meetings

Safety meetings at regular intervals are part of every Humble job. On drilling rigs, a five-minute meeting is held at the beginning of each *tour,* or change of crews. Here are discussed near-accidents of the previous tour, what to guard against during the next eight hours, and reminders of the terrible price the unwary must pay for unsafe practices and procedures. These meetings start everyone to work in a "safe" frame of mind.

The pattern of safety meetings varies with areas and with groups. People in a pipe line gang at Longview, for example,

Safety Inspection Committee at Baytown Refinery checks a line that might give trouble near the docks. Work of the group is to ferret out and report unsafe equipment, methods.

may hold safety meetings once every week or so. But wherever they are held, they are conducted by those who do the work; who speak for themselves as well as for their fellow workers. Safety

chairmen from each group conduct the meetings, and members of the groups take their turn at brief talks or demonstrations.

No holds are barred in these meetings. Frank and open discussion is the order of the day, and this frequently points the way to new and safer practices.

Do safety meetings save lives? Consider this case:

Last year, while high atop a pole at one location, an electrician slipped and fell across a 2300-volt "hot" wire. Just beneath him climbed a fellow worker, who knew what he had to do and realized that seconds counted.

Whipping off his work glove and shrugging into an insulated glove almost with the same motion, the rescuer reached up and seized the stricken man's leg. By sheer force, he pulled the unconscious man off the wire and handed him down to a third man, by now a quarter of the distance up the pole. From here, the gravely burned electrician was laid gently on the ground. The whole rescue took less than 20 seconds.

A doctor and the ambulance arrived in a matter of minutes. Though the injury was serious, the man lived—undoubtedly owing his life to the quick and correct action of his mates.

Safety Training

Training, aside from regular safety meetings, is a continuous part of Humble's safety program. For the past few years, courses in driver training have been teaching employees how to stay alive and in one piece on the road.

First aid training, too, has long been popular among employees, and a great many have brought their families into the first aid program.

Both driver training and first aid classes have paid off handsomely. Automotive accidents in 1951 were reduced to a mere .39 for every 100,000 miles driven in Company equipment. As for first aid, take a look at these cases—only a couple to illustrate the scores of first aid applications during the year.

There was the time, for instance, when a lawn mower nearly chewed off a youngster's foot. The lad had left the motor running while he tried to pull the mower out of a ditch. Somehow, his foot caught in the blades. Not much of it was left when his neighbor, a Humble employee, came rushing up. A tourniquet, swiftly and correctly applied, stopped the heavy bleeding until the boy could be rushed to a hospital. Quick action and the right use of first aid training may have saved his life.

In another case, suffering was relieved and a life may have been saved because a Humble employee knew what to do about snake bite. While bending to pick up an object on the job, one man was bitten on the finger by a hidden and deadly copperhead. In horror, he bolted upright, the snake still clinging to his finger.

Here again, a Humble man nearby proved to be a "good neighbor." Rushing up with a snake-bite kit, in response to the call of his bitten fellow,

he went to work at once. Cutting across the fang wounds as prescribed, he applied suction to the wound, tied a tourniquet, and rushed the victim to the nearest hospital.

When they arrived and a doctor inspected the patient, the verdict was: "Everything that I could do has been done. We'll keep the patient here a day or so, just to be sure." The man recovered in short order; there wasn't even the painful swelling that normally accompanies snake bite.

Using Proper Equipment

Head-to-toe safety equipment and clothing have saved many a Humble employee from being burned, gassed, scalded, blinded, cut, smashed—indeed from all the thousand unnatural shocks that lie in wait for the unwary and the unprotected.

Last year, a pair of safety goggles kept a man from being blinded or painfully hurt when a freak accident splashed molten lead across the lens of his goggles.

Another pair of these "eye savers" took the full, shattering impact of a stone hurled backward from the whirling blades of a large power mower. That man, shaken from his experience, wrote:

> "... I shut down the mower and ... took inventory. After I was convinced that I wasn't mortally wounded, I inspected the safety glasses and discovered ... only a cracked right lens. Well, I got to thinking, suppose I hadn't been wearing them or suppose they weren't good safety glasses.
>
> "So if you'll hurry up and send me a new pair, you won't have to worry one single moment about this roustabout and his safety glasses. In fact, I think I'll sit just a little bit closer to the front in the next safety meeting and pay just a little better attention to what goes on, because from now on I don't think I'll be very hard to sell on any of the safety rules."

In another case, use of proper equipment undoubtedly saved a life last year. That was in West Texas, where a heavy length of pipe struck an employee with terrific force directly on the crown of his safety hat.

The hat top was slightly split and dented, but the injured man suffered only a slight concussion. It was bad

enough, and painful enough—but the safety hat saved him from instant death.

Still another employee last year was spared his toes on one foot by the armor-plated toe of safety shoes. Here again, a 90-foot stand of drill pipe crunched down on the toe with grinding, tearing force. Without the steel cap to take the brunt of the blow, the pipe would have sliced away shoe, foot, and all.

Preventive Measures

Humble people don't wait for accidents to happen, and then figure out ways to prevent a recurrence. Safety engineers are joined by "safety committees" in all areas on inspection trips to look for conditions that might cause accidents unless corrected.

Is the stairway leading atop a tank battery too old and rusted? Take it out and replace it with a new one. Is a pipe slung too low, where it might bump heads of those following the passageway beneath? Raise it to a safer level. Do those unmarked tanks hold gas, caustic, acid, or other dangerous material? Mark them plainly, where all may see and so avoid.

All these things, and hundreds of others are the fruit borne of "on the job" inspection trips to ferret out unsafe conditions. Not only do safety people look for faulty or unsafely located equipment; they are forever on the lookout for practices and procedures that may lead to accident and injury. Carried on without let-up, this is a program that has dried up many a fountain of accidents at its source.

Safety-Consciousness

Of all the factors contributing to Humble's unparalleled record for safety in 1952, none is more important than safety-consciousness on the part of employees. That means an everlasting alertness to hazards of the job, a realization that there is a safe and an unsafe way to do every job, and a determination to choose the safe way.

Without that determination, that safety-mindedness, no amount of training or meetings or safety equipment would keep Humble people safe. Without an eagerness to listen and learn, no safety program could be successful. Without a willingness to wear them, all the protective equipment in the world would be wasted. Without a desire to use them properly, all the safety tools and devices would go for naught.

The New and the Old

Safety records like that set last year have not always been part and parcel of Humble operations, nor those of industry in general. There was a time—happily, long ago—when accidents were considered part of the day's work. If you got hurt, too bad. Everyone was sorry, but someone else stepped in and took over your job. If you hired on, you took your chances with the rest. Protective equipment and safety tools were almost unheard of.

A veteran Humble driller speaks reminiscently of those days:

"Safety rules have made me much more safety conscious. I can remember when there were no rotary or engine chain guards, no handrails on steps or stairways, no railing around the derrick floor, very few walkways fit to walk on, and no cathead safety dividers. Until the Company began to stress safety and accident prevention, and place guards on certain pieces of equipment, provide handbooks of safety rules, and hold safety meetings, we just didn't think much about whether we did the job safely.

"If someone lost his arm on a cathead or some fingers while making a connection, he was just lucky he hadn't lost his life. Of course, we felt sorry for those fellows but that's about all there was to it. No one seemed to really do anything about it; that is, to keep the same thing from happening to someone else. Ambulances made lots of trips to the old-time booming oil fields. Thank goodness it isn't that way now, and I think that safety rules like ours, made by men that actually do the work, helped a lot to change that picture."

MILLION MAN-HOUR RECORDS FOR 1952

1. Dock Department, Refinery
2. Pipe Department, Refinery
3. Compound Department, Refinery
4. Gauging Department, Refinery
5. Production Operations and Drilling, East Texas Division
6. Production Operations and Drilling, Louisiana Division
7. Stratton Production Operations
8. Louisiana Division Production Operations
9. Paradis District Production Operations
10. Southwest Texas Division Office
11. Katy Gas Cycling Plant—2,000,000 hours
12. Exploration Department—2,000,000 hours
13. Geologic, Lease and Scouting
14. Geophysics
15. Sales Department
16. Southeast Texas Sales
17. Humble Pipe Line Company
18. McCamey District Pipe Line
19. East Texas Production Operations
20. Southwest Texas Division Production Operations

How Long is a Million Hours?

If someone had been born when Columbus was a toddler, worked a straight 40-hour weekly schedule, and lived until 1953, he would have completed his millionth hour this year.

Safety and Efficiency

The employee who thinks enough of himself, his fellows, and his company to carry on his work in a safe manner comes to realize that there is more to it than just preventing injury and suffering. He goes on, eventually, to other aspects of safety; to the realization that safety and efficiency are far from strangers; that they go hand-in-hand.

He comes to know that a safe operation is an economical operation, the sort that benefits him individually as well as the company and others interested in its welfare. He sees safety "pay off" on his Company's balance sheet.

Along with the suffering and expense that accidents bring to individuals, they lay waste to the tools of production, and can be indicted in terms of goods and services lost forever.

Work done safely benefits all; accidents hurt everyone. Knowing that, Humble employees everywhere are proud, and rightly so, of the part they shared in bringing the Company's accident rate to the lowest ebb in Humble's history. They are determined to make 1953 an even safer year.

Safety man in Main Office talks to Sales Department people about relationship of accident frequency to size of truckloads.

Safety engineer gives a lecture on first aid practices to people in field. First aid has proved its worth, has often saved lives.

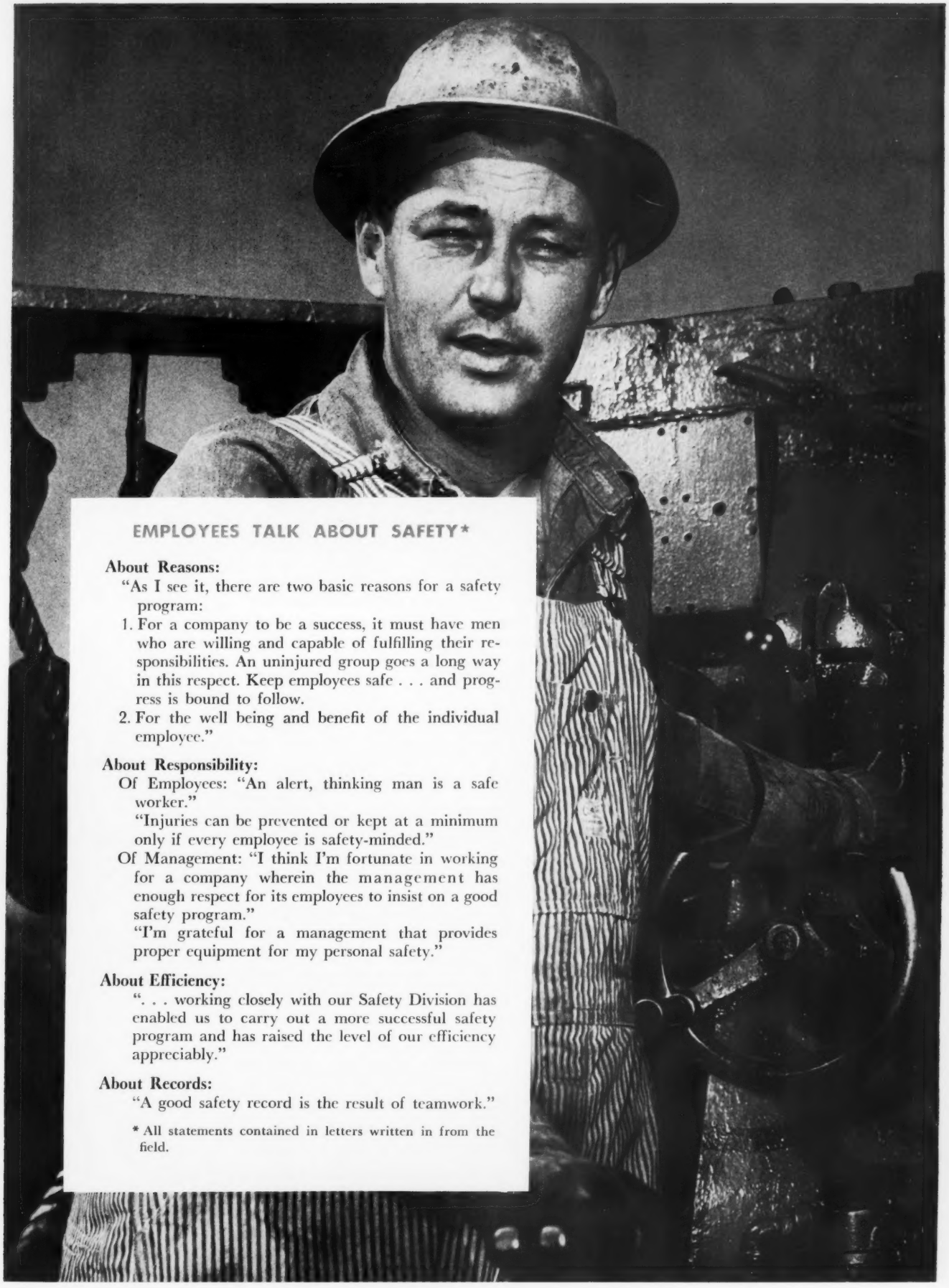
SAFETY

IT'S A JOB THAT NEVER ENDS

AN ACCIDENT never takes a holiday. It's always looking for a place to happen. That makes safety a full-time job, an unrelenting struggle against industrial hazards.

Everywhere one follows Company operations, there he will find work going on to make all work safer. Regular meetings to discuss hazards are part of every job. Special projects, such as courses in first aid, driver training, and the like, are presented by the Safety Division.

Safety meetings are held on drilling rigs before each tour, or change of crew. Work of the previous tour is discussed, with emphasis on hazards encountered, and all are put on guard against hazards that might arise during next eight hours' work.



EMPLOYEES TALK ABOUT SAFETY*

About Reasons:

"As I see it, there are two basic reasons for a safety program:

1. For a company to be a success, it must have men who are willing and capable of fulfilling their responsibilities. An uninjured group goes a long way in this respect. Keep employees safe . . . and progress is bound to follow.
2. For the well being and benefit of the individual employee."

About Responsibility:

Of Employees: "An alert, thinking man is a safe worker."

"Injuries can be prevented or kept at a minimum only if every employee is safety-minded."

Of Management: "I think I'm fortunate in working for a company wherein the management has enough respect for its employees to insist on a good safety program."

"I'm grateful for a management that provides proper equipment for my personal safety."

About Efficiency:

". . . working closely with our Safety Division has enabled us to carry out a more successful safety program and has raised the level of our efficiency appreciably."

About Records:

"A good safety record is the result of teamwork."

* All statements contained in letters written in from the field.

Sportscaster Kern Tips shows a Cotton Bowl television audience how Uniflo can provide new cars with year-round lubrication protection. Humble's remarkable new motor oil comes in only one grade, yet it meets four SAE viscosity classifications.

LOOK WHAT THIS OIL CAN DO!

Humble's new motor oil has proved more than a match for "4000-mile knock." It's an ideal diet for new cars

A FEW weeks ago the manager of a Humble station in Corpus Christi received a pleasant surprise. Onto his driveway walked a competitor, the manager of another station in the neighborhood.

"Got a customer who wants an oil change," the visitor said. "He insists on Uniflo. Sell me five quarts, will you?"

The Humble man didn't need the deductive powers of a Sherlock Holmes to understand the reason behind this unusual request. Another new car owner had heard the story of Uniflo Motor Oil, and he wanted his car brought under the protective wing of Humble's new trend-setting lubricant.

Trend-setting is just the word for Uniflo. This new type of motor oil was especially designed for today's high compression engines. Used right from the start, it offers the American motorist a twin boon: new car performance for a longer period of time and a potent weapon in the war on wear.

"In many ways," say the research engineers, "it represents an entirely new concept in automobile engine lubrication."

One needs tick off only a few of Uniflo's qualities to back up that glowing description:

An exceptionally high viscosity index . . . tailor-made for new or rebuilt engines . . . reduces friction wear in close tolerance engines up to 40 per cent . . . comes in only one all-weather grade . . . prevents "4000-mile knock."

Take that last item—Uniflo's ability to put the quietus on the noisy phenomenon known as "4000-mile knock," a complaint which only dates back to the postwar shift to high compression engines.

These new engines were marvels of efficiency. They delivered more horsepower per pound of engine and more mileage per gallon of gasoline. They were not, however, "bug-proof." A persistent knock, or ping, often cropped up after the first three or four thousand miles of driving.

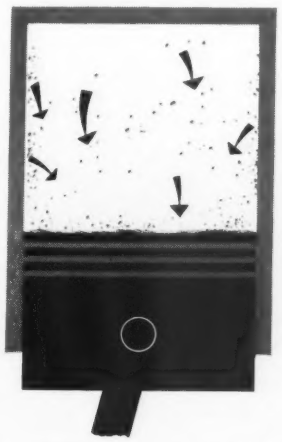
Study of the problem revealed that here was a knock that none of today's

premium gasolines could prevent or cure. This latest affront to the traditionally sensitive ears of new car owners was being caused by combustion chamber deposits. And much of the blame for these deposits could be pinned on the type of motor oil used in the car.

WITH convention oils, Detroit's engineers found, carbon from the burned oil combined with carbon from the burned gasoline to form deposits on the cylinder walls and on top of the piston head. In effect, this raised the compression ratio of the engine—raised it, indeed, to a point so high that no commercial gasoline could keep the engine from knocking.

The deposits also played hob with good engine performance in another way. In practically all cases they were irregular in shape, like layers of tiny corn flakes. Small points stood up among them, and these, glowing white-hot in the heat of the combustion chamber, acted as spark-plugs. This detonated the fuel-air mixture before it could burn evenly and smoothly and was another important factor contributing to knock.

In extensive field tests, Uniflo proved more than a match for "4000-mile knock." Automobiles were operated in identical fashion except for one thing: some used Uniflo, the others used a conventional SAE 10-W oil. After 4000 miles, the engines were subjected to a microscopic inspection. Combustion chamber deposits in the engines which used Uniflo were much less than those in the other engines. They were also of a different nature—not of the noise-making variety.



With ordinary oil, carbon builds up in layers in cylinder wall and on top of piston, causing "4000-mile knock."

Carbon deposits raise the compression ratio so high that commercial gasoline is unable to prevent knock.

Tiny peaks on carbon layer get white hot, causing pre-ignition of gasoline vapors. This also results in knock.

Uniflo prevents "4000-mile knock" by reducing buildup of carbon deposits. Most carbon is blown out.

WHAT made the difference? Well, for one thing, Uniflo's properties are such that only a small amount of carbon remains in the combustion chamber. The net result is that deposits are of a different type and are held to a minimum. The troublesome side effects which go with excess deposits are minimized.

No claim is made that Uniflo will eliminate deposits already present in an engine. It is a preventive, not a cure. Once the deposits build up to the knock point, the only recourse is an expensive combustion chamber cleaning job. For that reason it is of the utmost importance to start using Uniflo as soon as possible after getting a new car.

But its rout of the raucous gremlin called "4000-mile knock" is just one feather in Uniflo's cap. Its triumph over wear, a major cause of engine overhauls, have been equally impressive.

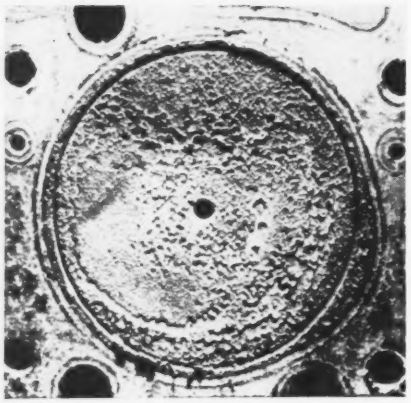
When development work started on Uniflo, research engineers visited repair shops, engine rebuilders, and factory service departments to find out what factor is the most harmful to engine life. In postwar engines, they found, the chief culprit is wear. In fact, wear is wholly or partly responsible for 85 per cent of engines overhauls.

But what causes wear? At this point the researchers unlimbered such atomic age tools as the electron microscope and radioactive tracers. Wear in automobile engines, they found, is caused by three things: friction, abrasion, and corrosion.

In recent years, much progress has been made in reducing abrasive wear. Air cleaners, oil filters, and regular oil changes—measures designed to keep abrasive materials such as road dirt, dust, sand, and bits of metal out of the crankcase — can largely prevent this kind of wear. As for corrosion, it can be cut in half by the acid-neutralizing detergents commonly added to most motor oils.

With Uniflo, the researchers endeavored to carry the war on wear a big step farther. Thinner oil, they knew, would flow more easily among the tight-fitting parts of today's close-

Uniflo was used in this combustion chamber and left almost no carbon deposits.



High quality SAE 10-W oil, tested under same conditions, left heavy deposits.

tolerance engines. If that thin oil could also be given good lubricating properties, less wear from friction should result. Uniflo proved their point. It reduces friction wear 20 to 40 per cent under that which takes place with conventional SAE 30 oil.

It is here that one has to take into account Uniflo's exceptionally high viscosity index. But just what, you may ask, is viscosity index?

FIRST, one needs to know that viscosity is a measure of ability to flow. Second, one must remember that oils thicken when chilled, thin out when heated. All oils do this, but oils differ a great deal in the degree to which they thicken up or thin out with the changing temperatures. The means used to compare oils in this respect is called viscosity index.

A motor oil with a high viscosity index (or high V.I.) is one whose fluidity, or ability to flow, is relatively stable under varying temperature conditions.

Uniflo's high viscosity index, then, means that while it is thin enough to flow freely at very low temperatures, it will not thin out as much at high temperatures as conventional oils. Uniflo, in fact, meets not one but four SAE classifications: 5-W, 10-W, 20-W, and 20. In the temperature range of 25 below zero to 110 above, all four of these SAE grades are ordinarily required by the new high compression engines. Uniflo spans this temperature range with a single grade.

That makes Uniflo a one-grade, year-round oil—a must for new cars and for engines rebuilt like new and an outstanding oil for any car using SAE 20 oil or lower. Drain intervals, of course, remain the same. Like any other oil, Uniflo should be changed at recommended intervals. But with Uniflo in his crankcase, a motorist can forget about those freakish changes in the weather which might otherwise cause him to worry about possible damage to his car or battery.

For Uniflo is also kind to batteries.

According to estimates of the American Automobile Association, more than 10 million service calls a year can be chalked up to battery failures. Electrical accessories and equipment sap a great deal of the battery's strength, but by far the greatest load placed on a battery is that involved in starting the car, especially in cold weather. The thicker the oil, the harder it is to turn over the engine and the greater the drain on the battery.

"The most effective way of reducing the drain on the battery," say the engineers, "is through the use of motor oils of lower viscosity."

Uniflo eminently qualifies on that score. At 40 degrees, it flows twice as fast as a conventional 10-W oil.

CREDIT for the development of Uniflo must go not only to the automobile and petroleum industries but also to the public. In the final analysis, researchers admit, it is the customer who sets the standards for the products he uses.

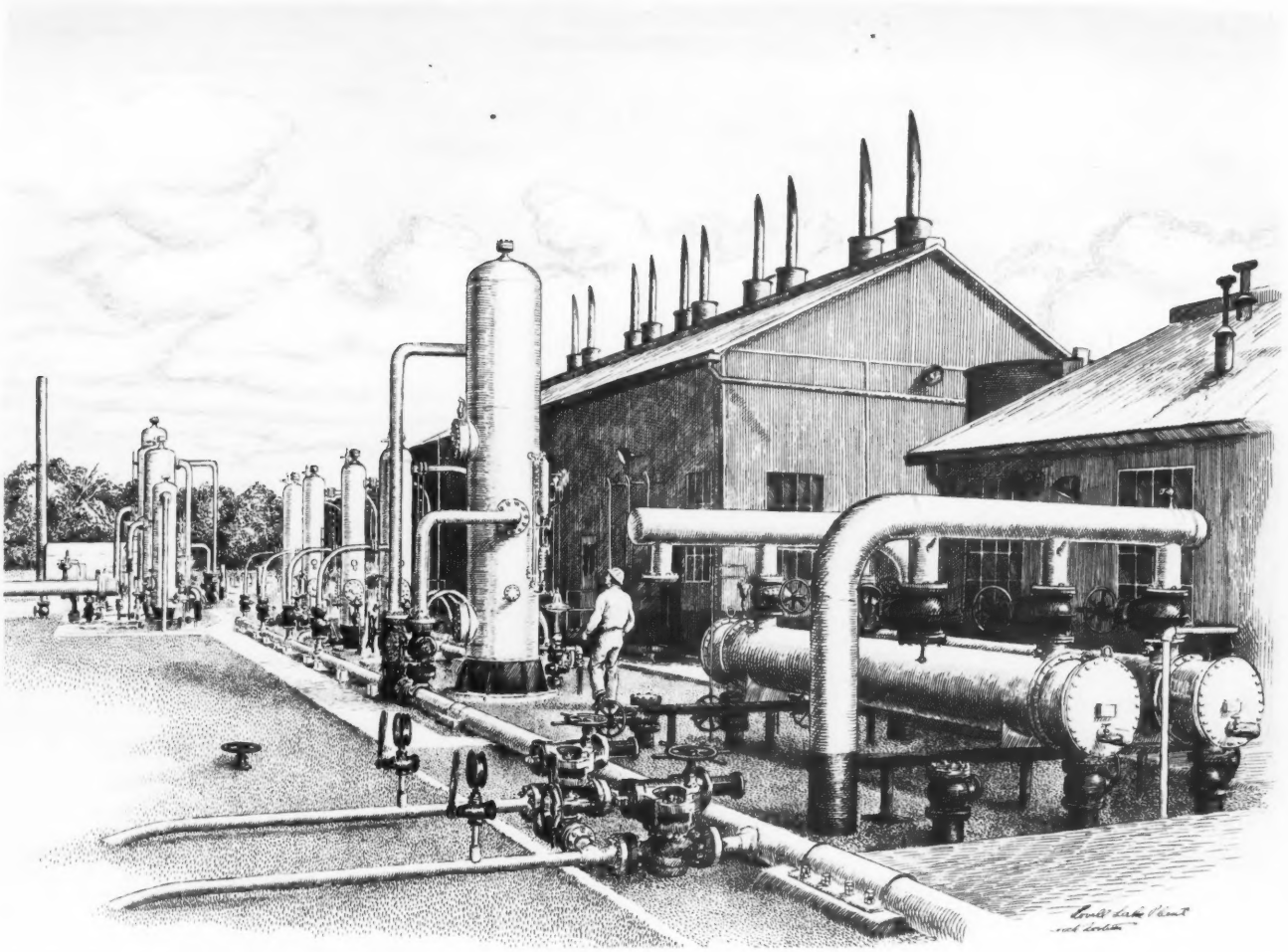
The customer wanted economy, performance, speed, and streamlining in his automobile power plant. The result: the high compression engine. The customer then wanted an oil which would enable this new engine to operate at top efficiency. The result: Uniflo.

Since Uniflo's introduction, letters from satisfied users have been flowing in to Humble. Typical praise goes something like this: "Makes my car run better . . . My car starts better in the morning . . . I didn't realize it could make so much difference."

But a Humble agent gave what was perhaps the best summary of why Uniflo has gained such a fast foothold in the lubricating field:

"For the extra protection a motorist gets," he said, "the slight extra cost of Uniflo is the cheapest insurance he can buy."

Modern automobile engines—such as this one on display at a Humble sales meeting—usually have high compression ratios. Uniflo is specially made for these engines.



At this Lovell Lake Plant casinghead gas is scrubbed to remove liquid hydrocarbons. The dry gas is then compressed and is returned to the oil formation to repressure the sand and help produce more oil than could be recovered normally.

NATURAL GAS

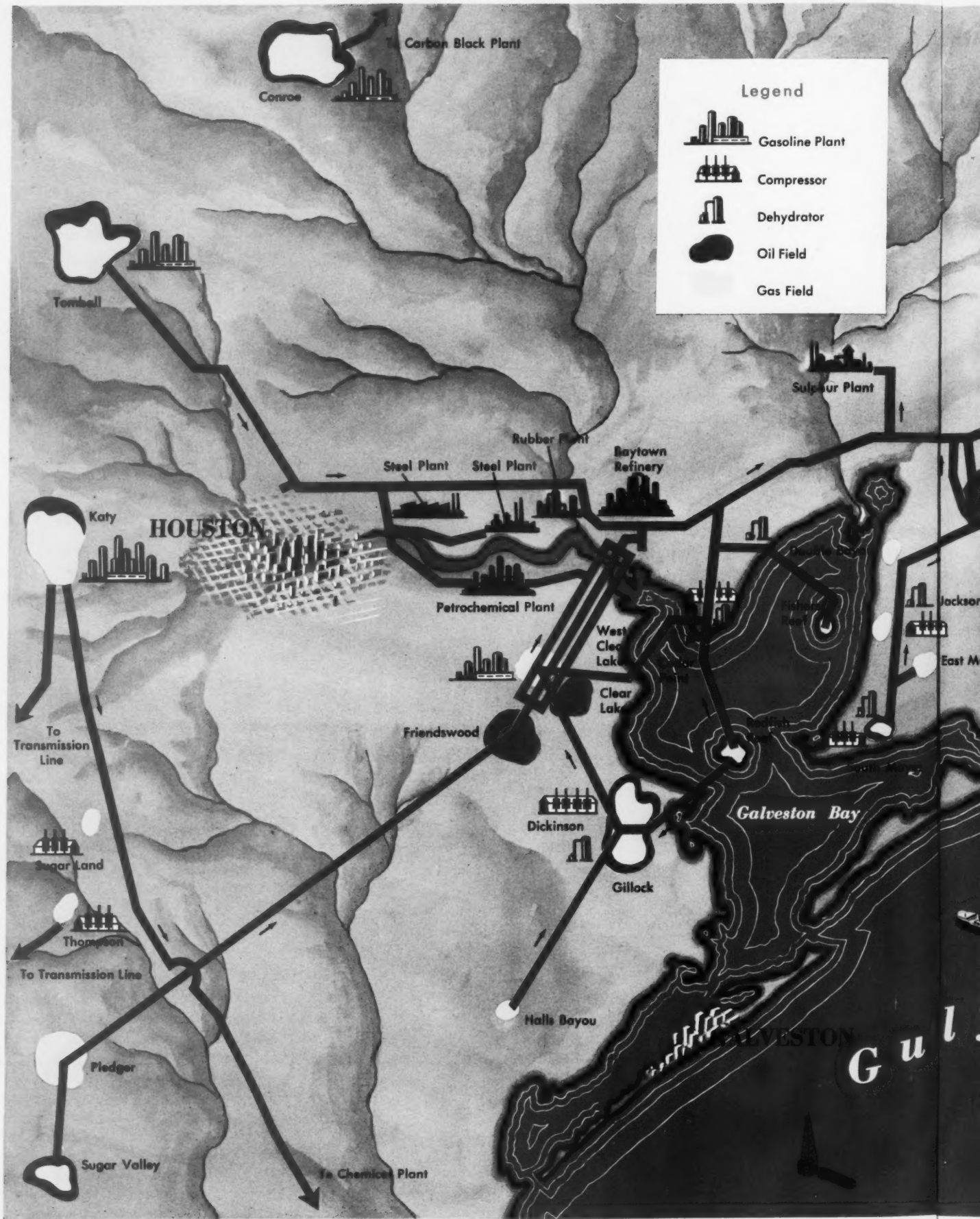
Its Conservation and Use On the Texas Gulf Coast

EACH 6,000 cubic feet of natural gas contains a fuel value about equal to that of a barrel of crude oil. On that basis the Texas gas reserves, and those of the United States, have a heat content greater than that of oil reserves. Hence, conservation of gas is as important as conservation of oil.

Gas occurs in the earth in two ways. First, there is gas that exists as such in underground reservoirs, either by itself in gas reservoirs, or overlying crude oil as a gas cap in oil reservoirs. If the gas occupies a reservoir by itself it is usually called non-associated gas. Conversely, if it overlies oil in a common reservoir it is usually designated associated gas. Second, there is gas dissolved in oil.

Gas produced with oil from an oil well is commonly known as casinghead gas. This casinghead gas is composed primarily of the gas released from solution in the produced oil. However, in an oil reservoir that contains a gas cap some of the overlying associated gas may also enter the oil wells along with the oil and become part of the produced casinghead gas.

Gas cap gas is not usually produced from gas wells in large quantity because efficient recovery of the underlying oil requires that this gas be kept in the reservoir or used in the reservoir to displace oil toward the producing oil wells. Every effort is usually made to prevent its premature production.


Legend
Gasoline Plant
Compressor
Dehydrator
Oil Field
Gas Field
To Carbon Black Plant
Conroe
Tomball
Sulphur Plant
Rubber Plant
Steel Plant
Steel Plant
Baytown Refinery
Katy
HOUSTON
Petrochemical Plant
To Transmission Line
Friendswood
Dickinson
Galveston Bay
Sugar Land
Gillock
Thompson
To Transmission Line
Halls Bayou
GALVESTON
Pledger
Sugar Valley
To Chemical Plant

Gas and oil fields from which come natural gas and casinghead gas for processing by Humble operated plants in the area are shown on the accompanying map. These plants extract from the gas about 30,000 barrels daily of useful liquid products. Shown also are the distributing systems which deliver dry residue gas from the plants to many of the area's industrial installations for fuel.

Problems relating to the conservation and use of casinghead gas have been very great. Difficulties in conserving casinghead gas have been and are both technical and economic. First, some casinghead gas is inevitably produced with crude oil. The quantities depend upon the amount of gas dissolved in the oil and the proportion of gas cap gas that necessarily must be produced along with the oil from gas cap type reservoirs. Production of gas cap gas may be affected by the rate of crude oil production and is dependent on other operating conditions.

Casinghead gas performs a useful function in raising or assisting in the production of oil from the ground. It serves this function by the act of displacing and forcing the oil out of the reservoir and up the wells to the surface. Thus, when casinghead gas is produced, even without further utilization thereof as fuel, it may be said to have accomplished an important function in contributing to efficient production of oil. And, after it has been produced it may, of course, be used for other purposes if economic incentives warrant the expense involved.

However, the conservation or final utilization of casinghead gas as fuel or as raw material for manufacturing industries is complicated by the fact that its supply at any time depends on its availability through oil production. This means: first, that it must be utilized as produced; second, that its supply cannot be regulated in response to immediate market demand as can gas produced from wells completed in gas reservoirs.

Moreover, casinghead gas cannot be stored on the surface except in relatively small quantities.

Because of these various complications there was only a limited market for Gulf Coast casinghead gas up to 1945. Gas well gas was plentiful to supply local and regional markets. Even

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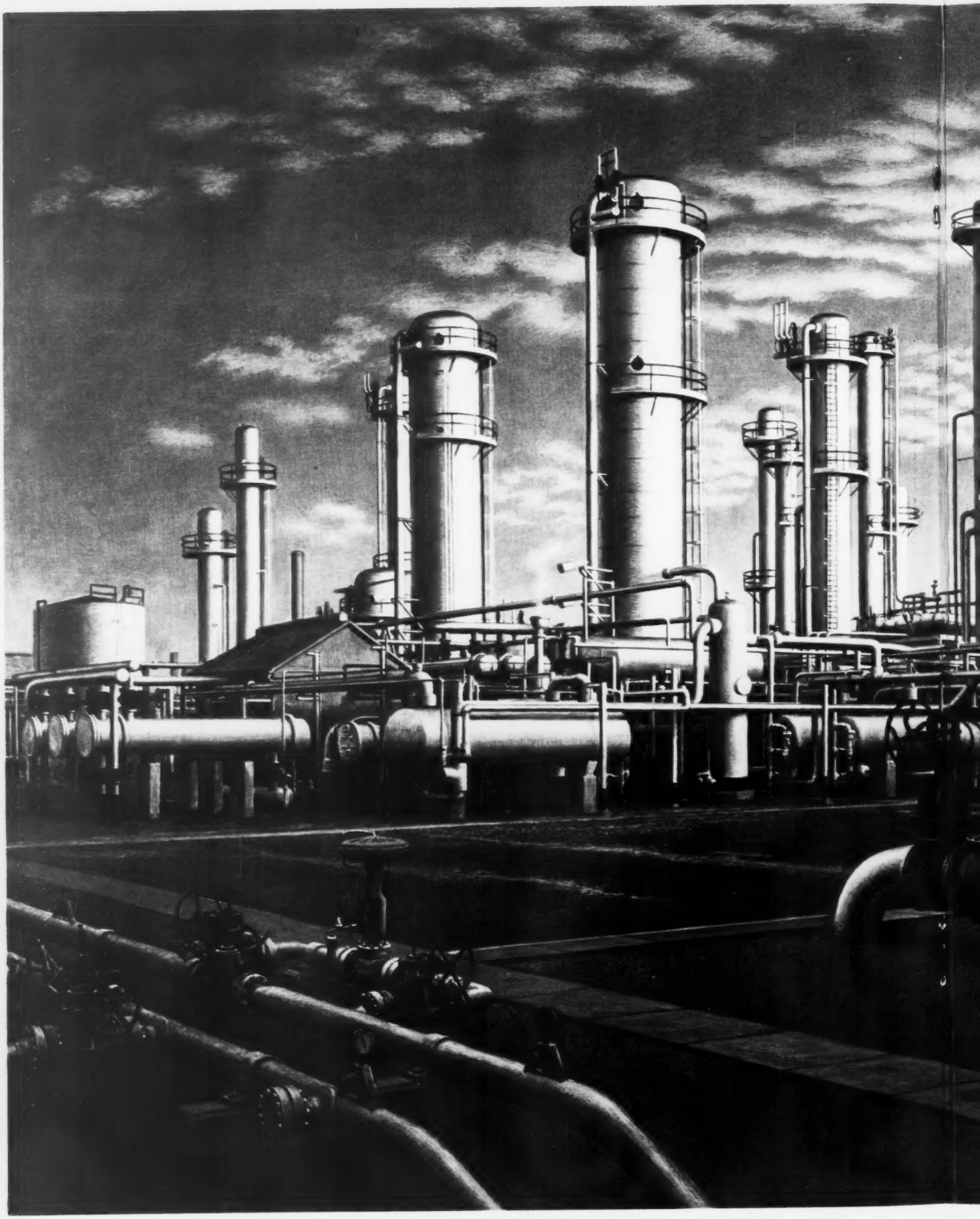
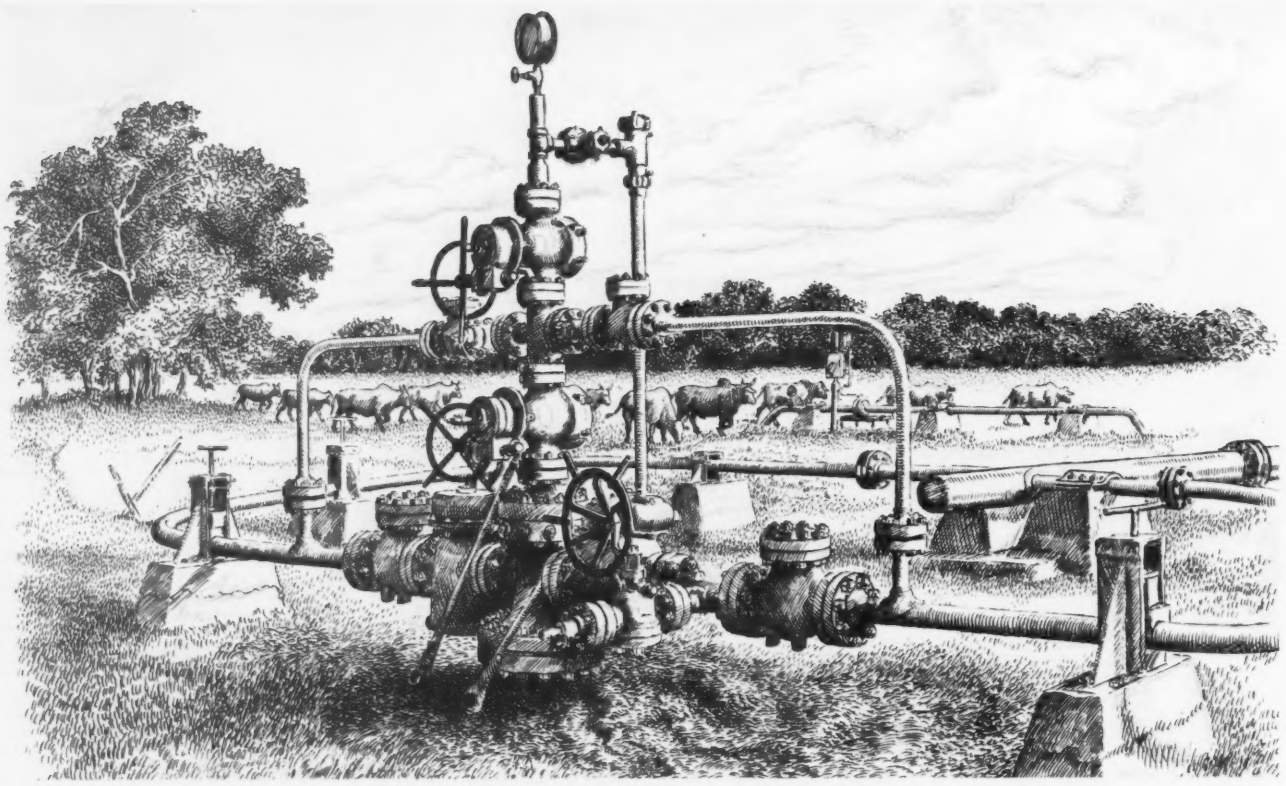
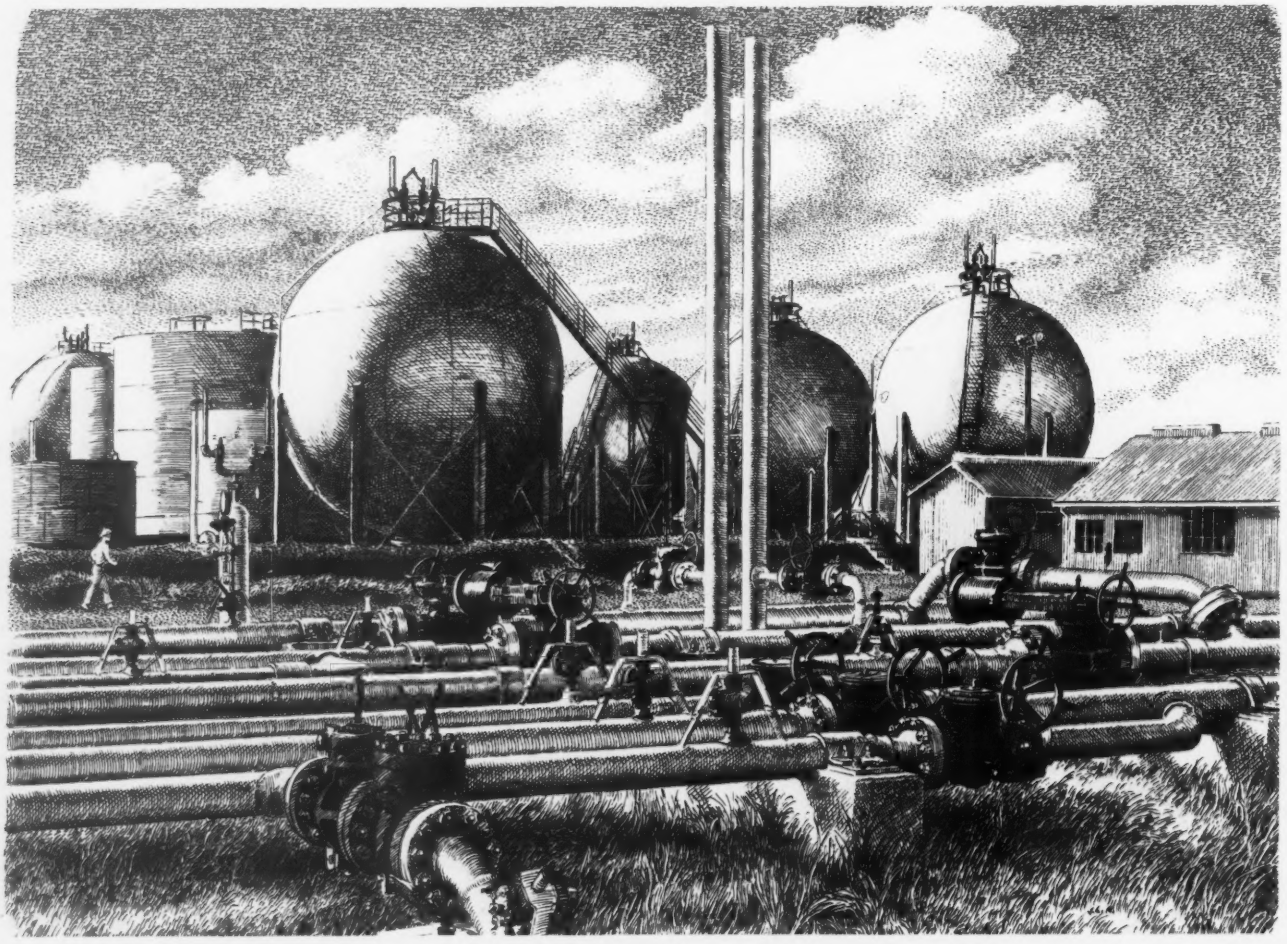


Katy Cycling Plant

Jackson Lee Nesbitt



Above, an injection well in the Lovell Lake Field. Below, storage tanks, flow lines, and valves at the Katy Gas Cycling Plant.



Humble Has Large Investment in a Variety of Gas Conservation Plants

(Continued from Page 11)

some distant markets were being supplied by pipe lines with a considerable amount of gas well gas, especially out of the Panhandle Field in Texas and the Monroe Field in North Louisiana.

By the end of World War II the rising cost of other fuels plus technological developments in efficient transportation by large pipe lines created new demands for gas in the large Eastern and Mid-Western markets. The principal sources of supply for these new pipe lines were the large gas fields of Texas and Louisiana. As these new lines were built they provided a market outlet for casinghead gas as well as for the large available supplies of gas well gas. It required, however, a considerable expenditure by oil producers to gather and process casinghead gas for delivery to these lines at the high pressures usually required.

For example, since the end of World War II, Humble alone has spent $43 million on gas processing plants and conservation projects.

THE gathering, processing, and marketing of casinghead gas presents many problems. Gas from oil wells is produced at low pressures and in relatively small volumes over widely scattered fields and areas, many of which are remote from pipe lines and markets. Usually, the only possibilities for the sale of casinghead gas are to pipe lines which transmit it to highly industrialized and densely populated areas. In some instances it may be sold for local domestic consumption or to nearby carbon black, chemical, or other industrial plants.

To make this gas available for delivery to a market or pipe line, it first must be gathered from the various wells within a field. Then, usually, its pressure must be increased by the use of compressors. Often, the gas must also be dehydrated and treated to remove objectionable impurities.

In many instances, several operators must join in a program to present a project which is economically feasible and, also, to make available enough gas to find or attract a market or justify a pipe line outlet. Even before market outlets were available for casinghead gas, producers were removing valuable liquids such as butane and propane from the casinghead gas containing enough liquids to justify processing.

Since the close of World War II the use of natural gas has increased enormously. Natural gas pipe lines have expanded from about 75,000 miles in 1945 to 120,000 miles today; the number of gas consumers has increased from about 9 million in 1945 to just short of 19 million today.

Casinghead gas has supplied a substantial part of this increased demand. In Texas, which alone accounts for about half of the nation's marketed production of natural gas, the volume of natural gas delivered to transmission lines increased by about 1650 billion cubic feet annually between 1946 and 1951. Of this increase about one-fourth was supplied by casinghead gas, either directly from leases or after processing at plants.

IN ADDITION to this nationwide expansion, gas consuming industries have moved to the large source of supply on the Gulf Coast. Many new plants in the chemicals, synthetic fibres, and metals industries have located here. They use the gas as fuel, and also, some gas and much of the liquid hydrocarbons extracted from gas are used as raw materials for the manufacture of an astonishing line of new industrial and commercial products.

The Humble Company has gas conservation facilities in various areas in Texas and in Louisiana, but much of its plant expansion has been on the Texas Gulf Coast. In fact, there has been completed in the past seven years a series of plants and additions to plants and gas distribution systems within a radius of about 75 miles of Houston that is an outstanding example of how gas is conserved and used.

In this area Humble was operating three important plants in the pre-war period: Conroe, Tomball, and Katy. The latter is a gas cycling plant owned by many operators in the field, but Humble is the principal owner in the field and the operator of the plant. Additions to these pre-war plants and construction of new installations gives Humble a group of plants which handles more than 850 million cubic feet of casinghead and gas well gas a day.

From this large volume of gas the several plants extract an average of slightly more than 30,000 barrels daily of liquids—natural gasoline, butane, propane, and other useful products.

How much is 30,000 barrels of liquids daily? It is 1,260,000 gallons. If it were all gasoline it would supply automotive fuel for about 19 million miles of car travel at average consumption rates.

SOME of the butane and propane produced in Humble's field plants is sold through distributors as bottled gas and in bulk for use in homes and on farms. Considerable quantities are consumed in industry. Some of the liquid hydrocarbons extracted from the gas find their way into the chemical industry by pipe line, tank cars, and tank trucks. The natural gasoline and a portion of the butane is channeled to Humble's Baytown Refinery and to other refineries in the area for further processing or for use as blending agents in quality gasoline.

THE dry or residue gas from the various plants is utilized in several ways. At the Katy Gas Cycling Plant a small portion is sold to pipe lines, but more than 80 per cent of the daily volume of over 550 million cubic feet is returned to the producing reservoirs.

This injection into the producing sand serves a double purpose: 1. the returned gas helps to sweep before it more wet gas from the reservoir into the producing wells to feed the big plant; 2. it serves to maintain the underground reservoir pressure, thus preventing the loss of liquid hydrocarbons in the reservoir due to condensation.

Residue gas from Humble's Conroe Plant is sold to a nearby carbon black plant. The residue gas from other Humble gas plants in the area goes into the industrial fuel market through the Company's gas systems from which average daily deliveries amount to about 340 million cubic feet. Users include chemical, steel, and sulphur companies; a power plant; the Company's own refinery at Baytown; and other oil refineries.

Two other important oil field uses

for gas are for gas lift and repressuring.

In the case of gas lift, natural gas is injected near the bottom of oil wells to cause them to produce when natural flow ceases. The bubbling action of the gas tends to lift and flow the oil as the gas makes its way back to the surface. This method provides in some cases a more economical and more efficient method for lifting oil than do mechanical pumping methods.

In repressuring or gas injection, gas is forced down under high pressure into an oil producing formation through injection wells. Here the gas maintains or restores reservoir pressures needed to produce oil. By restoring or maintaining pressure it is possible in certain fields where this procedure is economically sound, to obtain greater recovery of oil from the reservoirs. Thus, gas is put to work to help produce from existing oil fields the growing quantities of oil needed to meet increasing demands.

As a part of the many gas utilization facilities operated by Humble within a 75-mile radius of Houston, there are three significant operations of this type. They are located in the Sugarland, Amelia, and Lovell Lake oil fields. Engineers estimate that the additional oil ultimately to be recovered from these reservoirs which it would likely have been impossible to produce without gas injection, will amount to 8.5 million barrels.

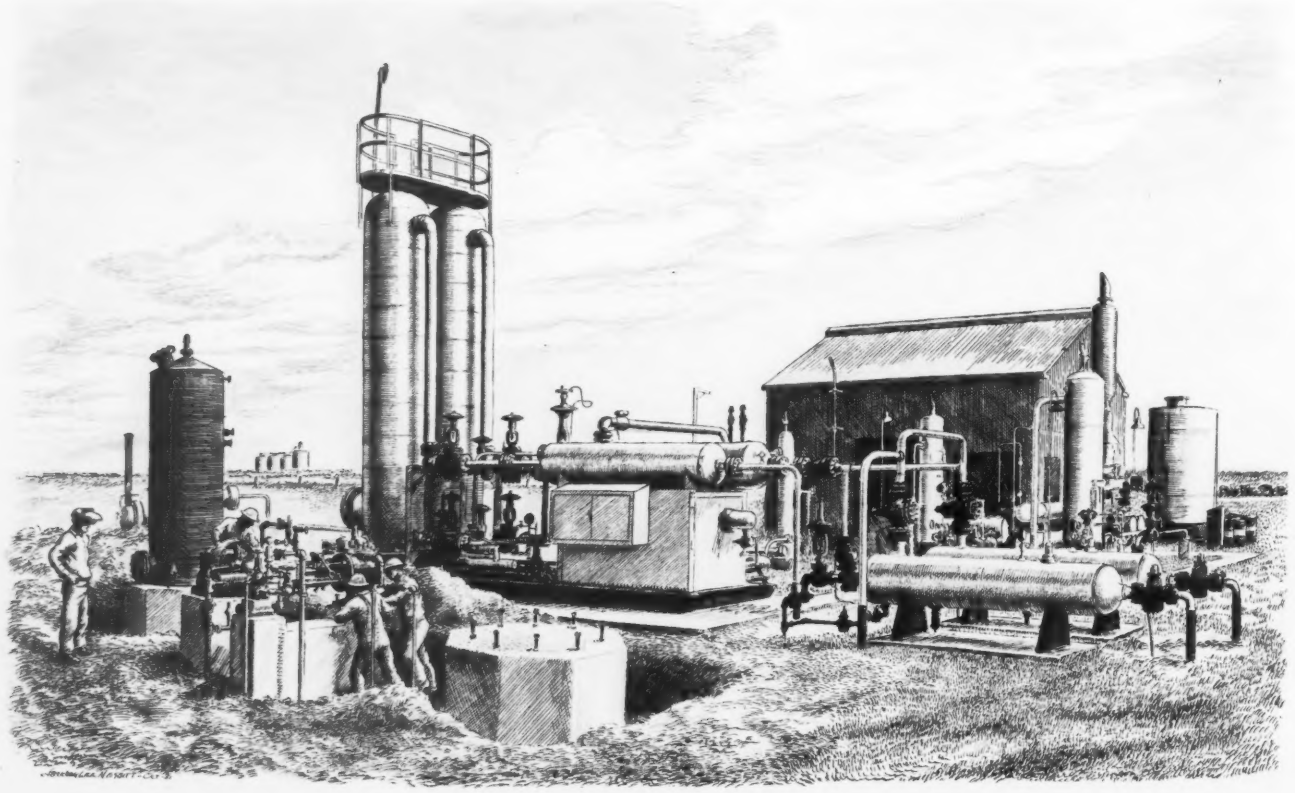
SIGNIFICANT also is the fact that the Sugarland pressure maintenance project is one of the earliest in the Company's history of conservation leadership. Maintaining pressure in the Sugarland oil field by injecting gas was started by Humble in 1930. The project served as a model to prove that this method for recovering more oil has practical application in many fields where an additional supply of energy is needed to recover the oil. It has been continued over the intervening period of 23 years. Today the field still produces about 3,700 barrels daily from 41 wells.

Thus the varied and growing gas conservation and gas utilization picture takes shape. Gas that used to be flared is now put to use wherever it is economically feasible to do so. Useful liquefiable hydrocarbons are extracted in such quantity as to produce a large source of raw material for chemical manufacture and to add significantly to the liquid fuel supply.

The gas itself follows several important routes to its utilization: it is stored in underground reservoirs as a future supply of fuel; it is distributed and sold as industrial or space heating fuel; it is injected into oil wells as a method for lifting oil to the surface; or it is pumped back into oil reservoirs through injection wells to maintain pressure and thus helps to yield more oil than would have been possible otherwise.

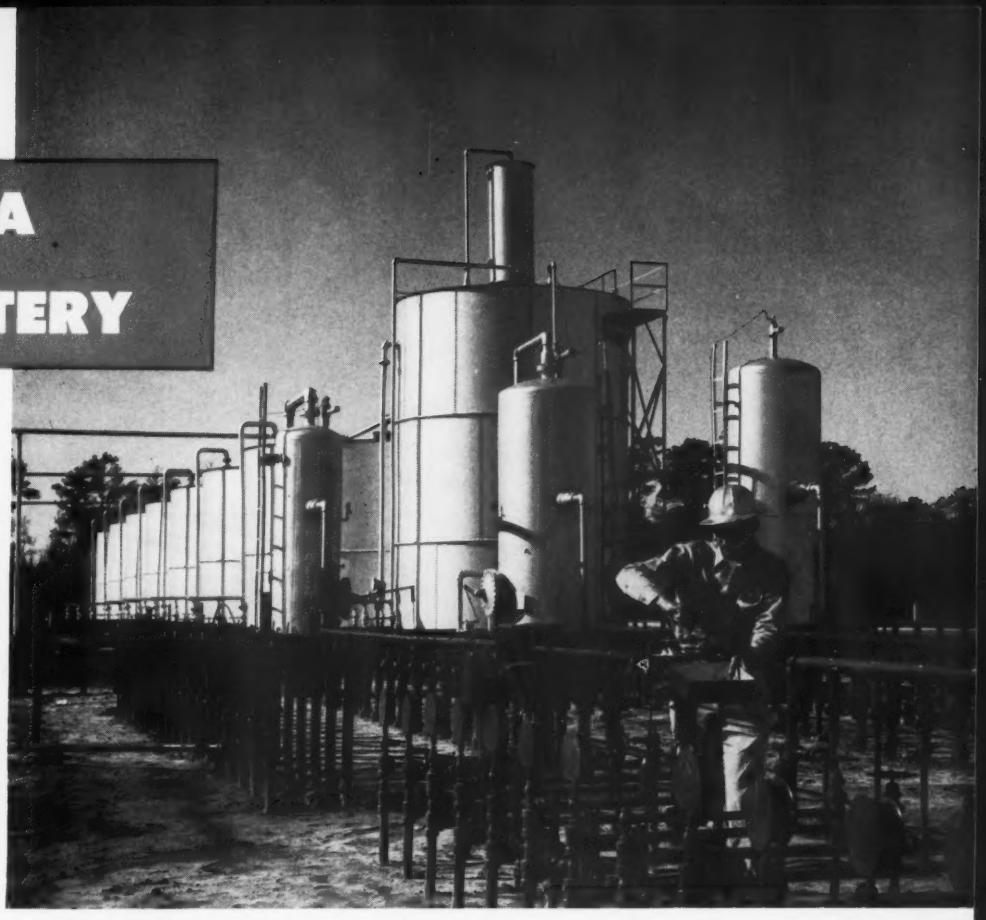
These multiple uses appear to justify the prediction some years ago of a leading petroleum economist that: "The hydrocarbon resources of the Gulf Coast are extremely valuable and will become even more important to this area in the near future."

Foundation work was completed about a year ago for the addition of dehydration equipment at the South Mayes repressuring unit



INSIDE A TANK BATTERY

In these glittering vessels, a messy brew is converted to pipeline-grade oil



Large tank battery such as this one at Friendswood can handle the oil output of several wells. The lease pumper (foreground) oversees operation of battery.

TO THE layman, mention of a tank battery sounds impressively military. The name conjures up visions of steel-clad behemoths, their cannon snouts pointing toward the battlefield.

To an oilman, a tank battery is something a great deal more commonplace. The term covers a special assortment of valves, flow lines, and odd-sized receptacles to be found on every productive lease. Its purpose: to accept crude oil from one or more wells; to rid this oil of gas, water, and other impurities; and to store it until delivery can be made to a buyer.

A tank battery, in short, is both a focal point and a transfer point—a focal point for oil produced on a lease and a transfer point where that same oil is switched from producer to pipeliner.

On small leases, one battery alone may be able to handle this traffic. On large ones, where wells are widely scattered, it may be necessary to have several of these outdoor depots, each serving a nearby group of wells.

Behind this division of labor is a sound economic reason. It ordinarily costs only $8,000 to $11,000 to erect a small tank battery. Laying flow lines to a distant central battery could, on the other hand, run to considerably more than that.

Just what—in a little more detail—happens to newly harvested oil behind the lumpy profile of a tank battery?

The flow chart of a typical battery (see sketch on next page) first routes the oil to a gas trap, better known as an oil and gas separator. In this slim metal cylinder, the gas-laden oil swirls against baffle plates while undergoing a pressure drop, thus inducing oil and gas to part company. From here, the gas wends its way to the gas-gathering system. The oil continues on its journey.

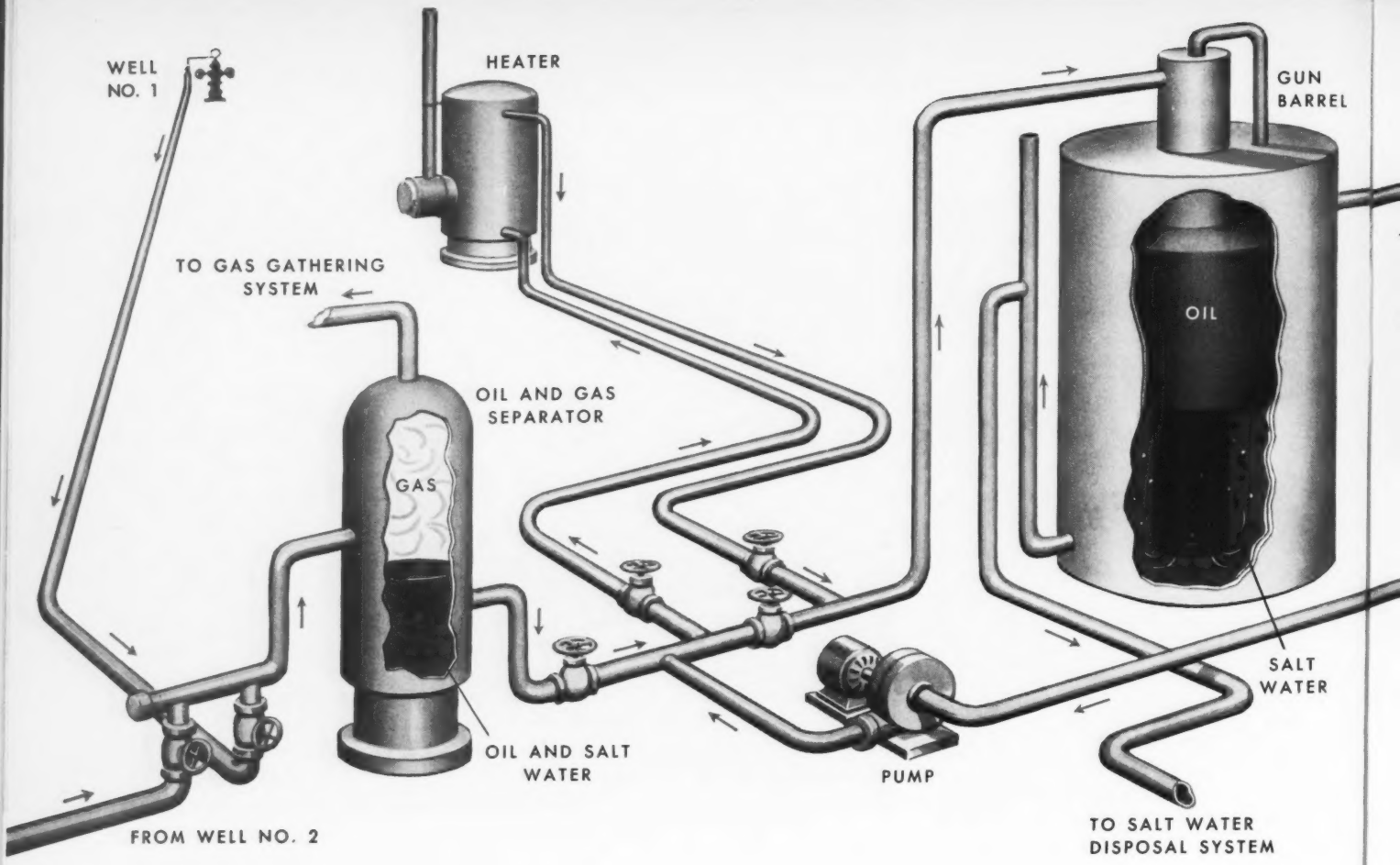
If the well is also making water, the crude's next port of call is the gun barrel or—if not that—a heater treater. To the gun barrel, so called from the tall, hollow flume which juts skyward from a turret-shaped body, is assigned the job of divorcing oil and water so the former may be raised to pipeline quality (less than one per cent water). En route to the gun barrel, the ill-mated fluids are likely to pass through a heater since the warmer the oil and water, the weaker their ties.

The water-cut crude enters at the top of the gun barrel, cascades into the flume, and then bubbles out into the settling tank which surrounds the flume. Covering the floor of this tank is a thick layer of water. The oil, being lighter than water, works its way up and floats atop the water. From here it is continuously drawn off into a stock tank. Its erstwhile companion, the salt water which had hitched a ride with it to the surface, is siphoned off to a disposal system.

(In recent years, flow treaters have been used on many leases. These devices combine in one piece of equipment the functions of an oil and gas separator, a heater, and a gun barrel.)

Once in a stock tank, the oil is ready for delivery — provided, of course, that it meets pipeline specifications after this one trip through the battery. (Sometimes a second treatment may be necessary.) Usually a pipeline takes it from here, but in some new fields the oil may be trucked out temporarily.

This neat and efficient method of handling the yield from an oil well would have been considered almost utopian by the contemporaries of Edwin L. Drake. In that early day, when the business was grab-as-grab-can, many a producer found that too much oil could be a worrisome thing



Tank battery is a small scale processing plant. From one or more wells comes oil intermixed with gas and water. Gas is ousted at separator. After being heated, fluid goes to gun barrel and water settles out. Oil then flows to stock tanks.

that left him singing the blues the clock around. How many millions of barrels of oil were lost forever because of slipshod storage methods can only be guessed.

Drake and his fellows, it is reported, resorted to wash tubs and whiskey barrels as containers for some of their early production. Indeed, the standard measure of the industry—a 42-gallon barrel—dates back to those hectic times. So, it is said, does a venerable expression, "cash on the barrel head," a saying which once meant literally that to the entrepreneurs of oil.

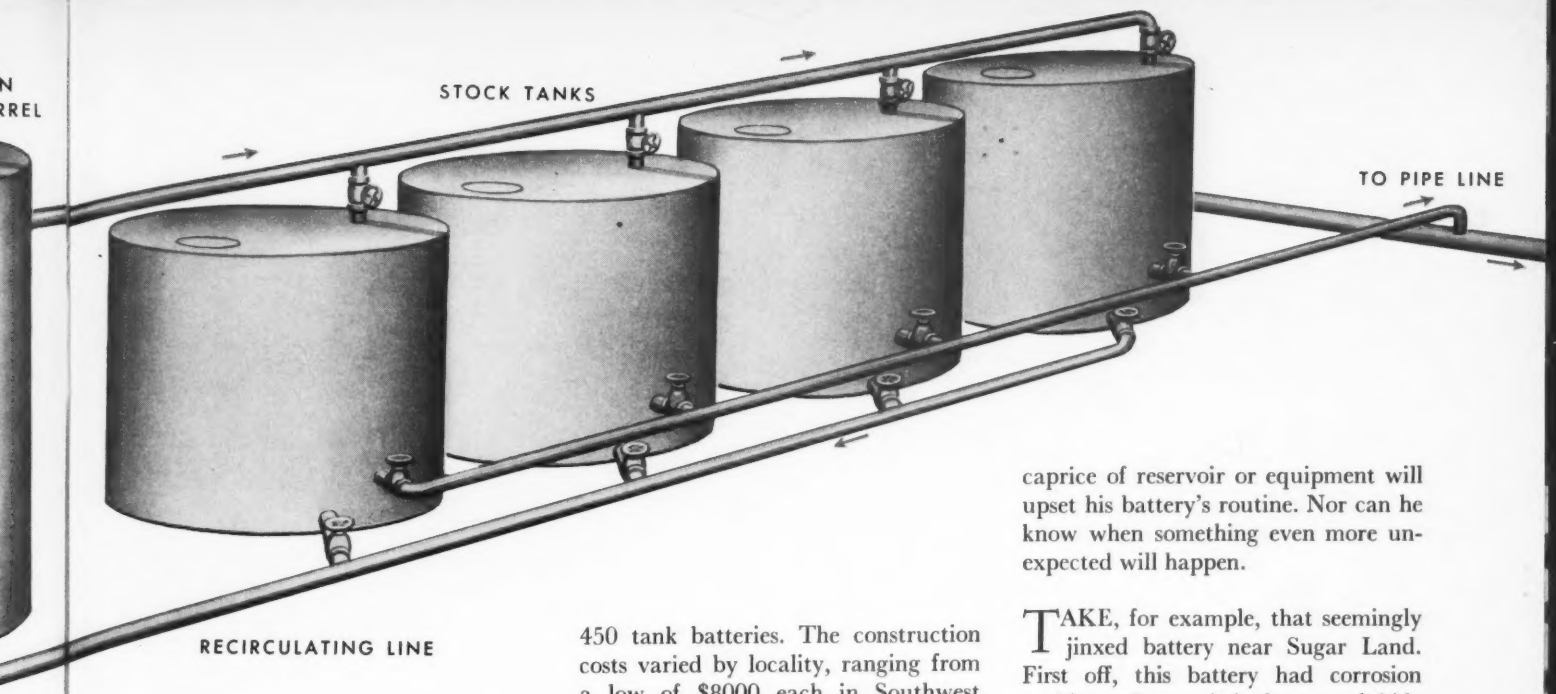
As the black flood increased, earthen pits—some shored up with timber—began to pockmark the nation's oil fields. These sumps, in a crude way, performed some of the functions of a modern tank battery. The gas separated out into the open air; the water settled to the bottom of the pit. But the loss through shrinkage, as the light ends evaporated, was terrifically high—sometimes as much as 40 per cent in a matter of three weeks!

Evaporation was not the only wasteful factor. Ground seepage was another rathole through which much additional oil disappeared. By the early 1860's, though, large open-topped wooden tanks, coopered from cypress staves and metal hoops, were available for closing this escape hatch. And when these tanks were eventually decked over, thus reducing evaporation loss, the basic prototype for a modern stock tank had come into being.

LOGICALLY enough, steel tanks followed soon after. The changeover, however—from earthen pit to wooden vat to steel tank—was not one that occurred overnight. Open-air sumps could still be seen in some of the roaring oil fields that cropped up hard on the heels of Spindletop. Wooden lease tanks continued to be a common sight until the early 1930's, and many of these old-timers are still in use. Even today, specially designed closed-top wooden tanks are still turned out for use in fields producing a corrosive sour crude.

The modern tank battery, then, did not spring into the world full-grown. Its development was an evolutionary process spanning many decades. This process is still going on, the latest trend being toward electrical or pneumatic control equipment which can automatically switch tanks, gauge production, and sometimes even shut in wells.

Today's tank battery has at least two stock tanks (most common sizes: 500-barrel and 1000-barrel) in its hook-up. That's so while you are running oil from one tank into the pipeline, you can be producing oil into the other. More stock tanks may have to be added if your wells belong to a high output, high allowable category. In any case, you need enough storage for three or four days' production since



pipelines, like trains and planes, have been known to run behind schedule. Then, too, a tank of oil may need retreating.

Where corrosion is no problem, the life of a tank battery is usually the life of the field. Occasionally one may have to be replaced because of some defect, inherent or acquired, but the day has long since passed when a certain percentage of stock tanks could be counted on to burst their seams and spill their oil on the ground.

THIS matter of tank failure was once a real hazard. In Texas, for instance, it used to be mandatory to build a dirt embankment, commonly called a firewall, around each battery. If a tank collapsed, this protective barrier was supposed to trap the oil and localize the damage. Progress in tank design and fabrication helped put such mishaps in a freakish category. In 1946, a survey showed that for each barrel of oil saved by a firewall, the industry was spending several thousand dollars in erecting and maintaining these earthen ramparts!

The rule, needless to say, was changed. Now firewalls are required only in areas where a ruptured tank might pollute a stream or create a hazard near a road or building. Even these protective terraces have become of dubious economic value, so rarely these days does a tank collapse.

Last year Humble put up about 450 tank batteries. The construction costs varied by locality, ranging from a low of $8000 each in Southwest Texas to $20,000 each in Louisiana. Accounting for the higher price tag in the latter oil area was an abundance of marshy terrain which necessitated platform footings for many tank batteries.

Overseeing the operation of each tank battery is the lease pumper, a man who plays a highly important role in the efficient production of any oil field. It is his job to produce the right amount of oil, to see that this oil is properly treated and stored, and to witness the testing and volume measuring that the pipeline gauger performs before running oil from the lease. He also keeps complete records on these activities.

The pumper also performs another important duty. If a well starts acting up, showing signs of needing a workover, it is the lease pumper—at his tank battery—who will be the first to detect the trouble. And the data he reports to his supervisor, the farm boss, will often determine the remedial action that will be taken.

The modern pumper's job is less fatiguing than it was during the days of open earthen pits. The reason for this is that the industry has provided him with more and better tools which are much kinder to the back muscles than those used 20 years ago.

You might think that life around a tank battery would be much the same, day after day. That isn't necessarily so. An oil well can be as ornery as a mule, as unpredictable as Texas weather. A pumper never knows when some caprice of reservoir or equipment will upset his battery's routine. Nor can he know when something even more unexpected will happen.

TAKE, for example, that seemingly jinxed battery near Sugar Land. First off, this battery had corrosion problems. So much hydrogen sulphide turned up in the crude that in little or no time the steel stock tanks were being riddled with holes. There was only one thing to do: replace all the steel tanks with ones made of corrosion-proof redwood.

Everything rocked along fine for a while. Oil flowed through the tank battery in a steady stream. But then the woodpeckers moved in. Standing on the hoops which girdled the tanks, they pecked away at the delectable redwood until finally oil was squirting all over the place. The pumper, though, was not a man easily fazed. He sent home for his fowling piece and centered a barrage of bird shot on the feathered aggressors. Many a woodpecker bit the dust.

Apparently the word got around. Since then, woodpeckers have left Humble's tank batteries strictly alone.

Stock tank gets a coat of paint as part of tank battery maintenance program.

Sky-scraping cranes tower high above ground-hugging lowboy trailers and other strange vehicles in this group picture of some of Baytown Refinery's mobile machines. These mechanical muscles have important role in daily maintenance of the plant.

BAYTOWN'S VERSATILE VEHICLES

It takes a variety of strange machines to keep up with never-ending chores of refinery maintenance

EVERY day is moving day at Humble's Baytown Refinery. There are always pieces of equipment to be hauled to and from the shops, pipes to be laid, dirt to be dug, and the thousand-and-one other routine hoisting and hauling chores necessary to the daily upkeep of a large refining plant.

To perform these important tasks quickly and safely, refinery men use a strange assortment of mobile machines, some of which are pictured on these pages. These are the mechanical muscles of the refinery, tirelessly obeying the directions of skilled operators.

Baytown's hoisting, hauling, and dirt-moving machines are as varied as the jobs they are called upon to do. There are midget ditch diggers and cranes, small enough to squeeze under low overhead pipes and work in narrow pipe alleys. At the other end of the scale are giant crawler cranes with booms towering 100-feet into the air, and with enough power to lift 40 tons of dead weight as easily as a man picks up a sack of flour.

These crawler cranes are the heavyweights of the refinery's mechanical weight lifters. They are especially valuable when a major operating unit shuts down for a turnaround. With time at a premium, the big cranes can move quickly into position, reach high into the superstructure of the unit, and lift out any ponderous part that needs to be repaired or replaced.

Hauling chores, too, require a variety of types of equipment. Baytown has a carrier for every need, from a conventional half-ton pickup truck to a gargantuan 24-wheel jackknife trailer that can carry 60 tons on its sturdy back without a groan.

Straddle-buggy simplifies task of moving unwieldy lengths of pipe. Refinery men find many odd jobs for these odd machines.

Crawler crane with long boom performs many Herculean tasks in the refinery. Here it is helping erect a tall stationary crane.

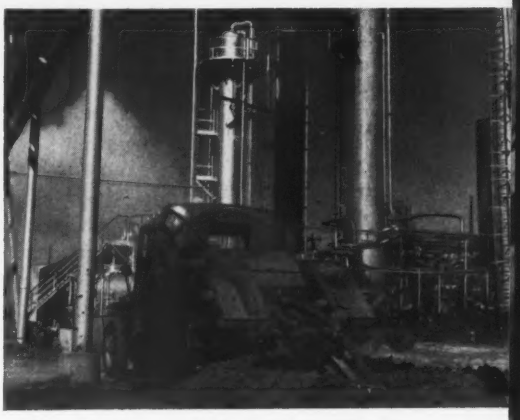
Somewhere between those two vehicular extremes are the stilt-legged carriers called "straddle buggies." These odd-looking machines, originally designed to handle stacks of lumber, have become the popular work horses of the refinery. They are used to pick up and deliver anything from a few wood planks to a 100-foot steel beam.

Earth-moving projects, always in progress around a refinery, are simplified at Baytown by use of several types of machines. Some of these were selected because of their ability to work in difficult locations. Others are as commonplace as the conventional road maintainer. One of the newer machines has a scoop at the end of a boom arranged in such manner that it can duplicate almost all the movements of a human arm and wrist.

All of these machines represent a considerable investment of capital, but they have proved economically practical. Use of the mechanized equipment has enabled refinery maintenance employees to do better work, faster, easier and with fewer accidents. It has helped reduce down-time on operating units.

It's no wonder that Baytown Refinery employees have a high regard for their versatile vehicles.

Fork lift truck easily picks up load of pipe in its strong mechanical arms.



Ditch digger attached to Jeep can go into places too small for big diggers.

Flexible as a human arm, this grading machine can poke its hand-like scoop into tight spots, work around and between buried pipes, grade slopes at any angle.

Twenty-Six Employees Retire

Combined credit time with Humble represents 750 years of service

TWENTY-SIX long-time employees of the Humble Companies have retired since the last issue of THE HUMBLE WAY. All of the employees have 24 years' service or more except one with 15 years of credited time. Their combined service with Humble totals 750 years. Robert B. Campbell, district salesman in the Southeast Texas Division, has the longest service period among this group with his 45 years of service with the Bonner Oil Company and the Humble Company. Alfred L. Taylor, night superintendent for General Operations at Baytown Refinery, has 34 years' service.

Humble Pipe Line Company—Arnold M. King, district gauger at Cisco, retired February 19 after more than 29 years' service. Mr. King joined Humble as a warehouse clerk and telegraph operator. Later he worked in various capacities such as clerk, assistant foreman, and engineer. He is interested in sports. He plans to remain in Abilene on retiring.

Frank H. Cuthbertson, Engineer at Raccoon Bend Station, retired February 17 after more than 26 years' service. He was employed as a helper at Goose Creek. Later he worked at Baytown, Barbers Hill, Raccoon Bend, Dickinson, Hull, and Tomball.

Production Department—Leland H. Benight, lease pumper-gauger at Gladewater, retired December 28 after almost 27 years' service. He was employed at Vernon as a roustabout. He has also worked at Holliday and Kilgore. Flowers and fishing are his special interests. Mr. Benight has bought a place on Lake Deverna, a fishing club adjoining the highway between Gladewater and Longview.

Lee Ellzey, district superintendent at Livingston, retired December 5 after 28 years' service. He began with the Company as a timekeeper at Holliday. Later he worked at Olney and Swastika. He moved to Livingston in 1941. Hunting and fishing are among his special interests. During retirement he plans to do some traveling.

Stephen E. Holt, toolpusher at Friendswood, retired February 1 after more than 31 years' service. Mr. Holt started to work for Humble as a rotary helper and derrickman at Davis Hill. Later he worked as a fireman, driller, watchman, roustabout, truck driver, and toolpusher. He was the first roughneck in the Company to be given a paid vacation. He is a sports fan and likes working with boys in organizing baseball games. He is also interested in teaching first aid. He is building a home in Raywood, Texas.

Ed Jefferson, roustabout gangpusher at Conroe, retired February 18 after more than 28 years' service. He joined Humble as a gangpusher at Sour Lake. He has worked also at Raccoon Bend, London, and Gladewater. He owns a home and about 92 acres at Hightower, where he plans to raise a garden, hogs, and chickens.

Albert S. McClendon, roustabout at Tomball, retired December 26 after more than 31 years' service. He started to work for Humble at Davis Hill as a rotary helper; later he worked as a tool dresser, derrickman, gangpusher, janitor, crum boss, boilermaker helper, and roustabout. He plans to raise a garden, chickens, and cattle on his five-acre place near Tomball. He will also do some hunting, fishing, and traveling.

Thomas F. McKey, lease pumper-gauger at Raccoon Bend, retired February 12 after more than 24 years' service. He began with Humble as a rotary helper at Corsicana, later serving in Houston, Webster, Fairbanks, Pierce Junction, Raccoon Bend, Hempstead, and Sugarland.

William A. Perdue, lease pumper-gauger at Talco, retired February 13, after more than 27 years' service. He was employed as a treater at Smackover, Arkansas. He has built a home in Talco where he will live and follow his hobbies of fishing and hunting and raising flowers.

Employees Recently Called to Military Service

ARMY	
Clark, Lawrence Donald	Stationery, Printing, & Reproduction, Houston
Cox, Robert Louis	Friendswood Production
Hafer, LeRoy, Jr.	Baytown Refinery
Hendrix, Pierce Paul, Jr.	Longview Connection, Pipe Line
Pavelka, Joseph Augustine	Exploration Geologic, Texas
Plumee, James Edgar	Avoca Production
Reese, Cullis Rayford	Baytown Refinery
Rumsey, Oliver Clifton	Avoca Production
NAVY	
Keen, Elmer Dean	Refugio Station, Pipe Line
MARINES	
Williams, James Weldon, Jr.	Crude Oil Accounting, Houston

Baytown Refinery—Jake Allen, laborer, retired January 25 after more than 15 years' service with the Company. All of his service with Humble has been as a laborer, laborer special, and coke handler. He plans to remain in Baytown and do some hunting.

Robert T. Barbour, chief shipping clerk, retired January 13 after almost 33 years' service. He began work as a clerk in the Accounting Department. His special interests include fishing, reading, and traveling.

Amos G. Boughton, helper second, retired February 1 after more than 24 years' service. He has worked as boilermaker helper, laborer, fireman in the Cracking Coils, and in various capacities in the Treating Department. He plans to pursue his hobbies, gardening and fishing.

Willis M. Brett, gang foreman, retired January 20 after 25 years' service. He began work for the Company in Houston and later transferred to the Refinery in the Paint Department. His special interests include fishing.

Jose Campos, laborer, retired December 25, after 30 years' service. He has served in various capacities in the Labor Department and Storehouse. During retirement, he plans to operate a grocery store in Baytown.

Sam A. Crabb, helper, retired December 17, after more than 25 years' service. All of his time with the Company has been spent in the Carpenter Department. During retirement, he plans to raise and sell cattle at Madisonville.

Robert H. Davanay, senior maintenance coordination clerk, retired January 11 after 26 years' service. He started at the Refinery as a helper in the Pipe Department. Later he worked in the Labor and Compound Departments. His special interests include woodworking, bridge, and canasta. During the summer, he hopes to do some traveling.

Solomon G. Davison, equipment cleaner pusher, retired February 1 after 32 years' service. All of his career with Humble has been in the Pipe and Labor Departments. He is interested in gardening, traveling, lodge and church work.

Harry A. Foster, accumulator man, retired February 1 after more than 27 years' service. All of his career with the Company has been in the Cracking Coil group at Baytown Refinery.

Manuel de la Rosa Garcia, laborer-brickmason, retired December 31 after more than 27 years' service. All of his service at the Refinery has been in the Labor Department. In retirement, he will take care of his home, raise a garden, and some livestock.

Charlie Griffin, laborer, retired February 1 after 32 years' service. All of his service at the Refinery has been as a laborer and teamster.

Walter Muckleroy, helper, retired January 23 with more than 27 years' service. He has worked in the Boilermaker and Treating Departments of the Refinery. He plans to buy a small place during retirement and raise chickens, livestock, and a garden.

Alfred L. Taylor, night superintendent in General Operations, retired January 30 after more than 34 years' service. Mr. Taylor has also served as shift foreman and night superintendent in the Process Department. His special interests include fishing, flower raising, and reading. He will live in Baytown, but expects to do some traveling.

Roy V. Wooster, boilermaker first, retired February 1 after 32 years' service. During his career with Humble, he has held a variety of boilermaker classifications. He intends to move to his 80-acre place near Hot Springs, Arkansas and raise cattle.

Houston Offices—Orlando E. Bemus, supervisory-accountant in Sales Accounting, retired January 15 after more than 33 years' service with Humble. Mr. Bemus was employed as an accountant. In 1932 he became head accountant in the General Accounting Section of Sales. He served in this capacity until May, 1939, when he assumed the duties of the position he held at retirement. He is interested in hunting and fishing, and plans to do more of both during his retirement.

Robert B. "Boley" Campbell, district salesman in the Southeast Texas Division, retired January 30 with more than 45 years' service. Mr. Campbell worked for the Bonner Oil Company before joining Humble. All of his career has been in the Sales Field, and he has worked as general, industrial, special, and district salesman. His hobbies include hunting, fishing, and woodworking. For the last interest, he has his own shop.

Joe A. Newsome, Sr., claim clerk in the Traffic Bureau, retired January 3 after more than 32 years' service.

Deaths

SINCE the last issue of THE HUMBLE WAY six employees and eight annuitants have died.

Active employees who have died are: Jack D. Anderson, 31, roustabout at Stratton, on January 7; Walker R. Daniel, 63, senior truck salesman at Mt. Pleasant, on January 9; Lynn W. Dickerson, 38, machinist second at Baytown Refinery, on January 28;

Continued on Page 24

Watch Awards Pass 1000 Mark

MORE THAN a thousand Humble annuitants and veteran employees are now wearing beautifully engraved gold watches—distinctive badges of their service with Humble.

On November 1, 1950, Humble established a policy of presenting these special awards to all employees upon completion of 30 years of service or upon retirement, whichever comes first.

On January 5, 1953, a check of the awards list has revealed, the 1000th watch was presented to an employee. It went to John Richard Glass, lease pumper-gauger in the London District, as he rounded out three decades of service with Humble.

Of the 999 employees who had previously received the awards, 971 were men and 28 were women.

Each recipient gets an opportunity beforehand to pick the style of watch he would like to have. Male employees can choose from four models of wrist watches and two of pocket watches. The ladies can select from four models of wrist watches.

Engraved on the watch is the employee's name, the occasion for the award, and the Humble ellipse.

The average Humble employee, however, has some time to go before he can pocket or strap on his watch. As of December 31, 1952, the average age of Humble employees was 38.14 years. The average service was 12.03 years. But total accredited service of all Humble employees amounted to 229,492 years.

By the way...

CASH CYI AWARDS MADE TO 266

A cash windfall of $10,590 was awarded recently by the Central Coin-Your-Ideas Committee to employees for 225 useful ideas submitted. These awards were for the last quarter of 1952. The number of employees sharing in the cash awards was 266.

Initial awards totaling $7,635 were made to 248 employees.

Winners in the Refining Department numbered 161; in Production, 53; in the Houston Office, 18; in Sales, five; and in Humble Pipe Line Company, four.

Supplemental awards, those made for employees' ideas after the ideas have been in use for one year, were made to 18 employees for 14 ideas. The amount of these awards was $2,955. Twelve Refining employees benefited from these supplemental awards; four Production employees; one Houston Office employee; and one Humble Pipe Line Company employee.

SALES INCREASE

Service station sales in the nation in 1952 gained nine per cent over 1951 sales, according to the Bureau of Census. The report includes the value of all station sales, not only petroleum products.

In Texas, Humble's sales of tax paid gasoline increased 10.6 per cent over 1951 sales. This increase helped to keep Humble ahead as the leading marketer in Texas with more than 16 per cent of the state's total tax paid gasoline sales.

THE COVER

Jackson Lee Nesbitt, creator of the cover painting and the painting and sketches in the center section, has been a contributor to THE HUMBLE WAY for some years. His paintings first appeared here in 1947.

Nesbitt lives in Kansas City, where he studied under Missouri's famous Thomas Hart Benton. Nesbitt's paintings in this issue are done in tempera; his sketches in pen and ink. He is also well known as the creator of fine etchings.

INCREASE IN ANNUITY CONTRIBUTIONS

On January 1 of this year, 9,722 employees participating in Humble's Annuity and Thrift Plan received increases in their rate of employee contribution to group annuities. The increase was based on their rates of pay as of Ocotber 1, 1952.

The average employee contribution is now $11.03 a month; the average Company contribution for each participant is now $39.81 a month. Thus, for each dollar contributed by employees to group annuities the Company contributes $3.61.

DEATHS (continued)

Cecil "E" Doak, 60, lease pumper-gauger at Conroe, on December 9; James A. Oliver, 56, farm boss at Hardin, on January 20; Willis A. Welch, 47, oiler at Webster Station, on December 27.

Annuitants: August H. Behling, 69, district gauger at Cisco before his retirement, died on January 16; Guy T. Blackwell, 44, pipe liner at Pierce Junction before his retirement, died on December 24; John H. Chapman, 75, mail truck driver at the General Office before his retirement, died on January 5; James E. Gordon, 64, assistant district gauger at Government Wells before his retirement, died on February 1; Allen D. Mann, 63, special salesman in the Southeast Texas Division Office of Sales before his retirement, died on January 16; Harry H. Mitchell, 57, janitor at Baytown Refinery before his retirement, died on January 31; Carl V. Van Orman, 74, lease pumper-gauger at London before his retirement, died January 10; Edwin W. Walker, 59, engineer at Webster Station before his retirement, died January 30.

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Published every other month for employees and stockholders

HUMBLE OIL & REFINING COMPANY

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Driveway salesman tells a Texas motorist about Uniflo, Humble's new trend-setting motor oil. (See Page 6.)

ESSO
UNIFLO
MOTOR OIL
The New Type Oil
for the New Cars
ATLAS BATTERY
ESSO
UNIFLO

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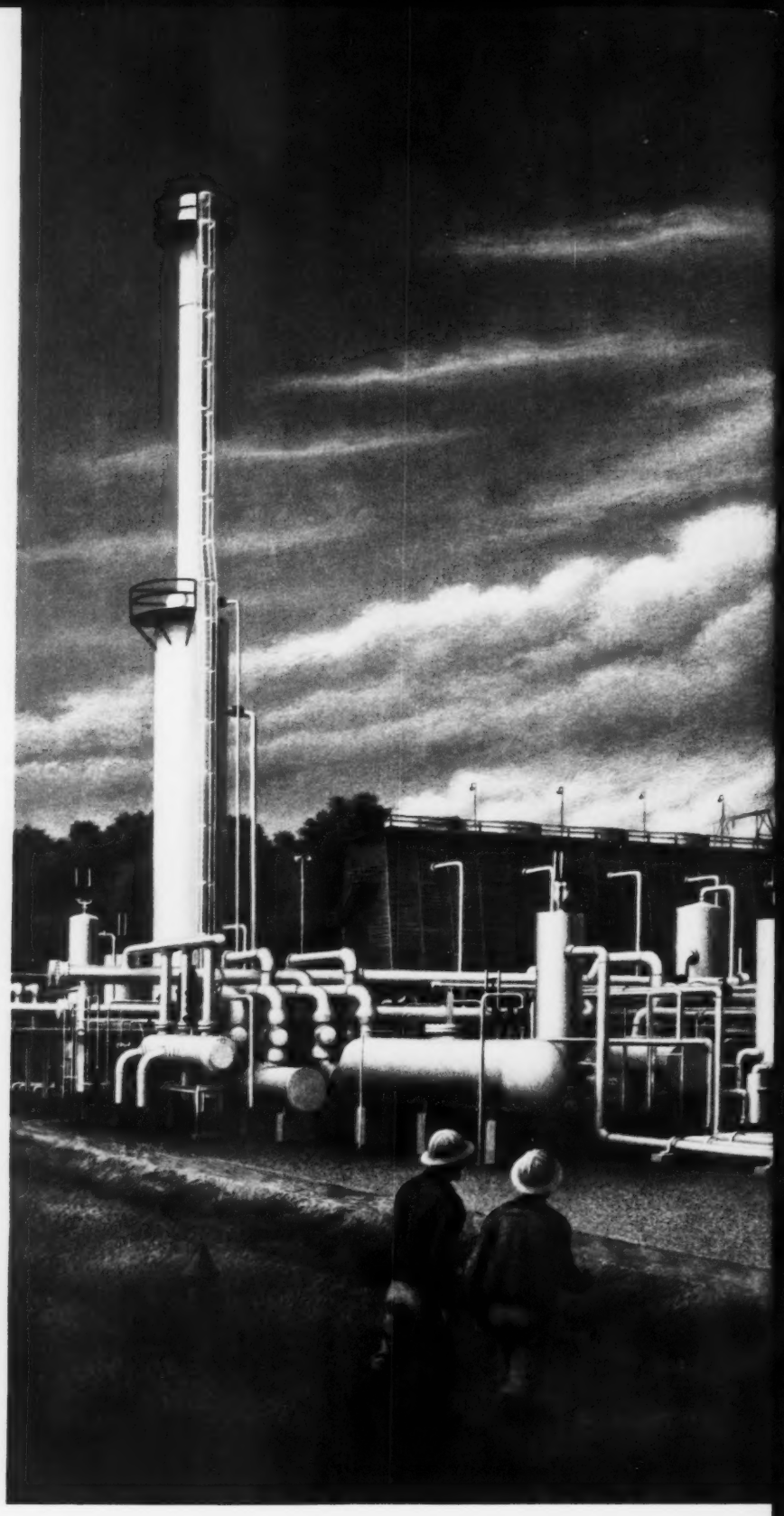
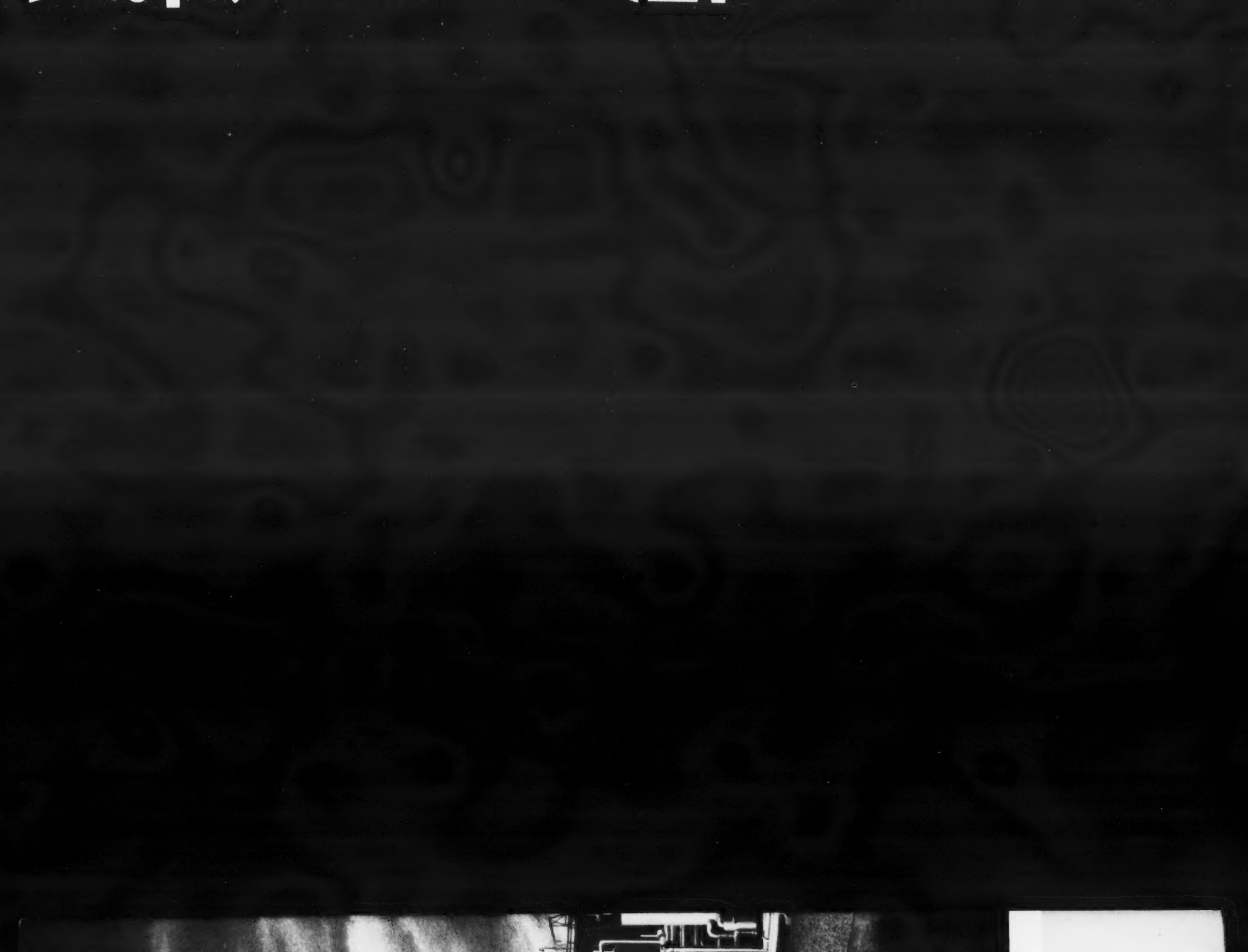


The gleaming plant depicted here by artist Jackson Lee Nesbitt is Humble's Opelousas Gas Plant. It stands in a setting of pine trees on the southeastern edge of Opelousas, Louisiana.

Every day this plant extracts 3,000 barrels of liquid products from some 165 million cubic feet of gas that it processes. Most of the gas is from gas wells, but a small portion is casinghead gas from oil wells in nearby fields.

The Opelousas plant is truly a conservation unit. Before it was built, the gas, after passing through separators, was sold directly into transmission lines and delivered as industrial fuel. Now the additional valuable liquids are recovered and the dry residue gas remains for use as a good industrial fuel.